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Top Secret

[redacted]

DIRECTORATE OF
INTELLIGENCE

Industrial Facilities
(Non-Military)

Basic Imagery Interpretation Report

Kherson Petroleum Refinery

Kherson, USSR

25X1

[redacted]

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Top Secret

RCS 13/0005/72
25X1
DATE OCTOBER 1971
COPY 117
PAGES 10

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

INSTALLATION OR ACTIVITY NAME		COUNTRY
Kherson Petroleum Refinery		UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	[redacted] 25X1
36TVS705670	46-39-40N 032-34-41E	

MAP REFERENCE
2nd RTS. US Air Target Chart, Series 200, Sheet M0250-9HL, 4th ed, Apr 69,
Scale 1:200,000 (SECRET) [redacted] 25X1

LATEST IMAGERY USED	NEGATION DATE (If required)
[redacted]	NA

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ABSTRACT

Kherson Petroleum Refinery is a small refinery with respect to charge capacity. The major production facilities include a crude oil distillation unit, a crude oil distillation and thermal cracking unit, a coking and distillation unit, a desalting unit, blending and treating units, and one unidentified secondary processing unit. Several additional processing units are under construction.

The products of the refinery include straight-run and cracked gasolines, kerosene, diesel and fuel oils, coke, and asphaltic materials.

In December 1963, when the area was first covered on good-quality photography, about 40 percent of the refinery facilities were present. By September 1966, site preparation was observed for a crude oil distillation unit, several additional processing units, and storage and shipping facilities. On the latest coverage in April 1971, the crude oil distillation unit appeared to be complete but not in operation. Construction was continuing on other processing units and the storage facilities.

The refinery was in operation on all coverage from December 1963 through April 1971.

This report includes a detailed line drawing, a photograph of the refinery, a detailed listing of equipment and facilities with measurements of storage tanks, and a discussion of the status of facilities.

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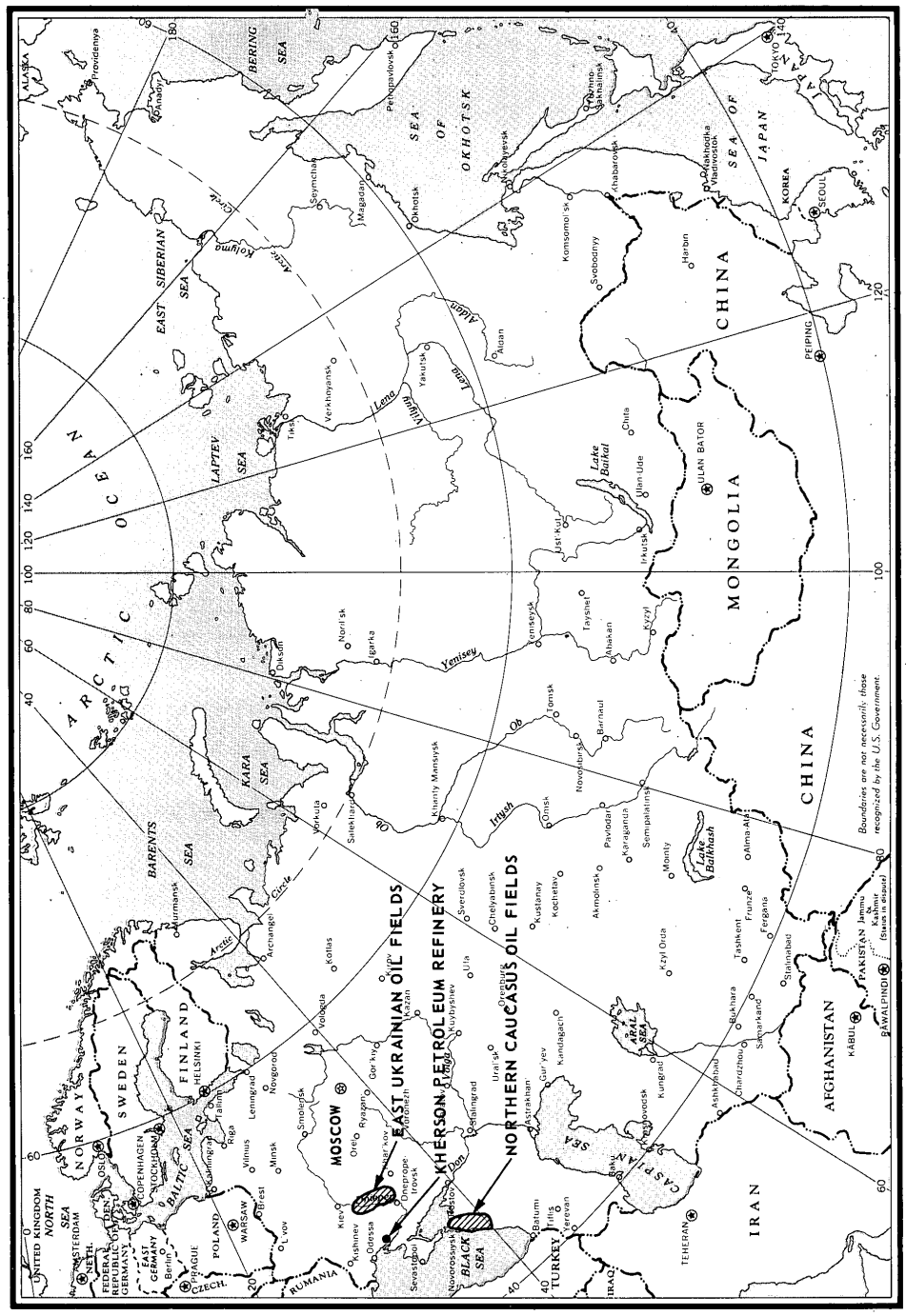

FIGURE 1. LOCATION MAP.

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INTRODUCTION

Kherson Petroleum Refinery is located on the northern outskirts of Kherson, 1.5 nautical miles (nm) northwest of the Dnieper River (see Figure 1).

During 1937-1938 a small cracking plant designed for refining reduced crude oil from a Baku refinery was reportedly put into operation at Kherson. At the beginning of World War II the plant was disassembled and moved to the eastern part of the country. Between 1947 and 1950 the refinery was rebuilt and put back into operation at Kherson. 1/

Crude oil to charge the refinery comes by tanker and rail from the Northern Caucasus and East Ukraine oilfields. 2/ Reportedly a 225-mile crude oil pipeline to the refinery from oilfields near Poltava and Chaskov is scheduled for completion in 1971. 3/

The refinery receives electric power through a transformer substation located immediately north. Steam for the refining processes is produced at the collocated Kherson Thermal Power Plant Petroleum Refinery [redacted] 25X1
This plant is listed as a thermal power plant in the Basic Encyclopedia. No transformer section has been observed on photography, however, so the plant appears to produce only steam and not electricity.

BASIC DESCRIPTION

Physical Features

The refinery occupies about 550 acres in an area measuring 6,100 by 4,000 feet (see Figures 2 and 3). It is secured by a wall.

The refinery is served by rail spurs from the mail line between Nikolayev and Kherson, and several rail car transloading racks are located in the refinery. A pipeline connects the refinery with a storage and transshipment facility located on the Dnieper River 4.5 nm to the southwest. This facility allows crude oil to be shipped to the refinery by barge.

Operational Functions

This is a small refinery with respect to charge capacity. The major refining units presently in operation include a crude oil distillation unit, a crude oil distillation and thermal cracking unit, a coking and distillation unit, a desalting unit, one and probably two blending and treating units, and one unidentified secondary processing unit.

Based on the identification of processing units, the products of the refinery include straight-run and cracked gasolines, kerosene, diesel and fuel oils, coke, and asphaltic materials.

Construction and Operational Status

The refinery was operating when it was first seen on good-quality photography in December 1963. At that time the desalting unit, part of the crude oil distillation and thermal cracking unit, one and probably two blending and treating units, the unidentified secondary processing unit, the steam plant, and about 40 percent of the present storage tanks were in place.

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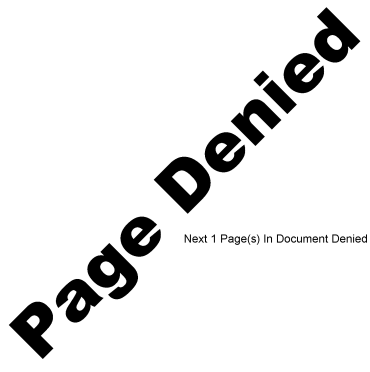

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By March 1965 only a few storage tanks and water treatment/storage basins had been added to the refinery. In September 1966, when only the northern half of the refinery was seen on cloud-free photography, site preparation was observed for the crude oil distillation unit (Area E), processing units in Areas B and D, and the storage and shipping facilities in Area A.

By March 1968, the crude oil distillation and thermal cracking unit and the coking and distillation unit were complete. The crude oil distillation unit was in the early-to-midstages of construction. The processing units in Areas B and D were in the early stages of construction. Seven large storage tanks were installed in the storage and shipping area (Area A). The water treatment and cooling facilities in Area C were in the midstages of construction. The storage facilities in Area G were being expanded. Site preparation was observed for the transformer substation located just north of the refinery.

In June 1969 the crude oil distillation unit and the processing units in Areas B and D were in the midstages of construction. Construction was continuing on the storage facilities (Areas A and G) and on the water treatment and cooling facilities. The transformer substation was in the midstages of construction. By August 1970 the crude oil distillation unit and the transformer substation were nearing completion. Little progress was noted on the processing units in Areas B and D.

In April 1971, the crude oil distillation unit appeared complete but not in operation, since no steam was observed at the unit or the associated cooling towers. The transformer substation was complete. The processing units in Area B were nearly complete, but little progress was noted on the processing unit in Area D. Work on the storage areas and the water treatment and cooling facilities was nearly complete.

The refinery was observed in operation on all coverage from December 1963 through April 1971.

Facilities and Equipment

Table 1 lists the functional areas and equipment within the refinery. In areas which are still under construction and whose functions are undetermined, the buildings and processing equipment are not listed in the table or shown on Figure 3. All measurements are rounded to the nearest half-meter.

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Table 1. Equipment and Facilities at Kherson Petroleum Refinery
(Keyed to Figure 3)

Area	Functional Description	Equipment and Facilities
A	Storage and Shipping	2 Rail car loading racks 2 Support buildings 19 Cylindrical storage tanks, 33 meters in diameter 1 Tank base 7 Horizontal storage tanks, 27 meters long
B	Processing Units Under Construction	Facilities not listed
C	Water Treatment and Cooling	10 Buildings 7 Cooling towers (one under construction) 7 Covered water reservoirs 3 Cylindrical storage tanks 2 [redacted] 25X1 1 12-meter-diameter 2 Semiburied tanks (not measured) 16 Water storage/treatment basins
D	Processing Unit Under Construction	Facilities not listed
E	Crude Oil Distillation	1 Unit with 1 atmospheric column 1 vacuum column 8 other columns 6 banks of heat exchangers/ accumulators/cooling coils (one on the roof of a building) 3 pipe furnaces 4 processing buildings (one with 6 horizontal tanks and one with 6 cylindrical storage tanks, 3 meters in diameter) 1 pump building 7 horizontal treating/ storage tanks 1 support building 2 Support buildings
F	Blending, Treating, and Shipping	1 Blending and treating unit with 1 building with 7 batch agitators/mixers 1 pipe furnace 1 processing building 1 large shipping building under construction 1 support building 1 Probable blending/treating unit with 14 probable blending/ treating tanks 1 small pipe furnace 3 processing buildings 2 support buildings

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Area	Functional Description	Equipment and Facilities
G	Storage	7 Buildings 86 Cylindrical storage tanks 5 33-meter-diameter 3 30-meter-diameter 5 [redacted] 25X1 4 21-meter-diameter 9 [redacted] 25X1 22 12-meter-diameter 12 [redacted] 25X1 13 9-meter-diameter 2 [redacted] 25X1 5 6-meter-diameter 4 [redacted] 25X1 2 3-meter-diameter 5 Horizontal storage tanks, 21 meters long 1 Semiburied storage tank (not measured) 8 Tank bases
H	Probable Blending/Treating and Shipping	1 Unit with 2 processing columns 8 probable treating towers 8 probable blending/storage tanks 5 processing buildings 1 loading rack 3 support buildings 2 Loading racks 12 Support buildings 6 Cylindrical storage tanks, [redacted] 25X1 2 Semiburied storage tanks (not measured)
I	Storage and Support	27 Buildings (9 are in two separately secured areas) 1 Cylindrical storage tank, 7 meters in diameter 2 Horizontal storage tanks (in one of the separately secured areas) 12 meters long 2 Semiburied storage tanks (not measured) 1 Tank under construction
J	Desalting	1 Unit with 1 cluster of processing equipment 2 banks of heat exchangers/ accumulators/cooling coils 3 processing buildings 12 cylindrical storage/ treating tanks 2 12-meter-diameter 10 [redacted] 25X1 9 horizontal desalting/ treatment drums

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Area	Functional Description	Equipment and Facilities
K	Crude Oil Distillation and Thermal Cracking	1 Combination unit with 14 columns 4 banks of heat exchangers/ accumulators/cooling coils 2 pipe furnaces 2 air coolers 1 processing building 1 pump/compressor building 2 cylindrical storage tanks, [redacted] 25X1 2 horizontal storage tanks, 15 meters long 4 Support buildings
L	Unidentified Secondary Processing	1 Unit with 17 columns 2 banks of heat exchangers/ accumulators/cooling coils 2 pipe furnaces 3 air coolers 7 processing buildings 4 cylindrical storage tanks, [redacted] 25X1 7 horizontal storage/ processing tanks 2 15-meter-long [redacted] 25X1 4 9-meter-long
M	Support	1 Steam generation building 7 Storage/support buildings 3 Cylindrical storage tanks 1 9-meter-diameter [redacted] 25X1 2 Horizontal storage tanks, [redacted] 25X1
N	Coking and Distillation	1 Coking unit with a 10-bank shell still and 1 fractionation column 1 Distillation unit with 5 columns 1 cluster of processing equipment 2 banks of heat exchangers/ accumulators/cooling coils 2 small pipe furnaces 2 processing buildings 1 pump building 10 Buildings (one under construction) 4 Cylindrical storage tanks, 6 meters in diameter
O	Water Treatment and Cooling	12 Buildings 3 Natural-draft cooling towers 9 Water storage/treatment basins

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REFERENCES

Imagery

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Map

2nd RTS. US Air Target Chart, Series 200, Sheet M0250-9HL, 4th edition, April 1969. Scale 1:200,000 (SECRET 25X1
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Documents

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3. The Petroleum Publishing Co., Oil and Gas International, Volume 11, Number 4, page 92, April 1971 (UNCLASSIFIED)

Requirement

COMIREX NO2
Support Number 422964

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